

REMARKS

The Examiner has continued rejecting Applicants' claims 1-5, 7 and 9 on new grounds. This time, the Examiner rejects the claims as being anticipated by U.S. 6,034,208 (McDaniel). Applicants respectfully traverse the rejection for the reason as follows.

MPEP § 2131 instructs

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicants urge the Examiner to withdraw the anticipation rejection of claims 1-5, 7, and 9 because the Examiner fails to follow the instruction of MPEP § 2131 and because McDaniel does not teach each and every element as set forth in the claims. Applicants particularly request that the Examiner reconsider claims 1 and 3.

First, Applicants request that the Examiner reconsider the rejection of claim 1.

There are three essential elements of claim 1:

- (a) continuously forming a monomer stream that contains an acrylic monomer, a polyether macromonomer selected from the group consisting of poly(propylene glycol) acrylate, poly(propylene glycol) methacrylate, poly(ethylene glycol) acrylate, poly(ethylene glycol) methacrylate, acrylates and methacrylates of an oxyethylene and oxypropylene block and random copolymer, and mixtures thereof, and a chain transfer agent; and an initiator stream that contains a free radical initiator; and, optionally, a chain transfer agent stream;
- (b) continuously polymerizing the streams in a reactor at a temperature within the range of about -20°C to about 150°C; and
- (c) continuously withdrawing a polymer stream from the reactor.

Although, as the Examiner correctly states, McDaniel mentions a continuous process for making the relevant comb-branched copolymers, McDaniel cannot anticipate claim 1 because it does not teach a continuous process as claimed.

McDaniel does not teach the element of claim 1 (a), i.e., continuously forming a monomer stream that contains an acrylic monomer, a polyether macromonomer selected from the group consisting of poly(propylene glycol) acrylate, poly(propylene glycol) methacrylate, poly(ethylene glycol) acrylate, poly(ethylene glycol) methacrylate, acrylates and methacrylates of an oxyethylene and oxypropylene block and random copolymer, and mixtures thereof, and a chain transfer agent; and an initiator stream that contains a free radical initiator; and, optionally, a chain transfer agent stream.

According to claim 1 (a), two essential streams must be continuously formed: a monomer stream and an initiator stream. In the Office Action, the Examiner fails to specify where McDaniel teaches continuously forming these two streams. In fact, McDaniel provides no such teaching at all.

Because McDaniel fails forming the two streams of claim 1 (a), consequently, McDaniel also fails to teach continuously polymerizing the streams, which is required by claim 1(b).

Concerning claim 1(c), the Examiner states: "Since the process described by McDaniel is a continuous process it inherently assumes the continuous withdrawal of a polymer from reaction zone." *See the Office Action, page 4.* Even if the Examiner is correct in this aspect, her failure to find elements claim 1(a) and 1(b) from McDaniel renders the anticipation rejection of claim 1 deficient.

MPEP § 2131 also urges

"The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). "The elements must be arranged as required by the claim." *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

As discussed above, not only are the elements not arranged as required by the claim, but also two of the three essential elements of the claim are missing from the reference. Thus, the anticipation rejection of claim 1 must be withdrawn according to MPEP § 2131.

For the same reason, claims 2-5, 7 and 9 are not anticipated by McDaniel because they depend from claim 1, and therefore they incorporate in all limitations of claim 1.

Second, Applicants request that the Examiner reconsider the anticipation rejection of claim 3.

Claim 3 depends from claim 1. As discussed above claim 3 is patentable because it incorporates all of the limitations of claim 1. Applicants ask the Examiner reconsider claim 3 because even if claim 1 were not patentable, claim 3 is still patentable.

Claim 3 further limits the process of claim 1 to a polymerization temperature ranging from about 40°C to about 60°C. As the Examiner correctly notes, McDaniel expressly teaches:

"The copolymerization temperature is not believed to be particularly critical, with the optimum temperature varying depending upon the identity and reactivity of the macromonomer and comonomer(s), the polymerization initiator and solvent, the molecular weight desired, and so forth. Typically, however, temperatures in the range of from about 0°C to about 150°C are suitable." Col.8, lines 31-37.

Contrary to the reference teaching, Applicants found that the polymerization temperature is critical to the properties and the performance of the comb-branched copolymer.

Applicants' experimental results show that when the copolymerization is performed at a temperature within the range of claim 1, the resultant copolymer has very narrow molecular weight distribution and thus better performance. See Example 1 where the copolymerization temperature is 40°C and the copolymer has Mw/Mn=1.36. In contrast, McDaniel performed the copolymerization at 85°C (reference Examples 7 and 8) and 70°C (reference Example 9) and the resultant copolymers in reference Examples 7-9

have Mw/Mn 3.5, 3.0, and 6.4, respectively. These copolymers of broad molecular weight distributions have inferior performance as water-reducers in cement.

"A genus does not always anticipate a claim to a species within the genus." See MPEP § 2131.02. Although McDaniel has a generic disclosure of the polymerization temperature range (0°C to 150°C), this genus does not anticipate claim 3 which specifies a temperature range (from about 40°C to about 60°C) within which the resultant polymers have superior performance. Hence, according to MPEP § 2131.02, claim 3 is not anticipated by McDaniel.

Accordingly, Applicants respectfully ask the Examiner to withdraw the rejection and to allow claims 1-5, 7, and 9. Applicants invite the Examiner to telephone their attorney, Shao-Hua Guo, at (610) 359-6059, if a discussion of the application might be helpful.

Respectfully submitted,
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